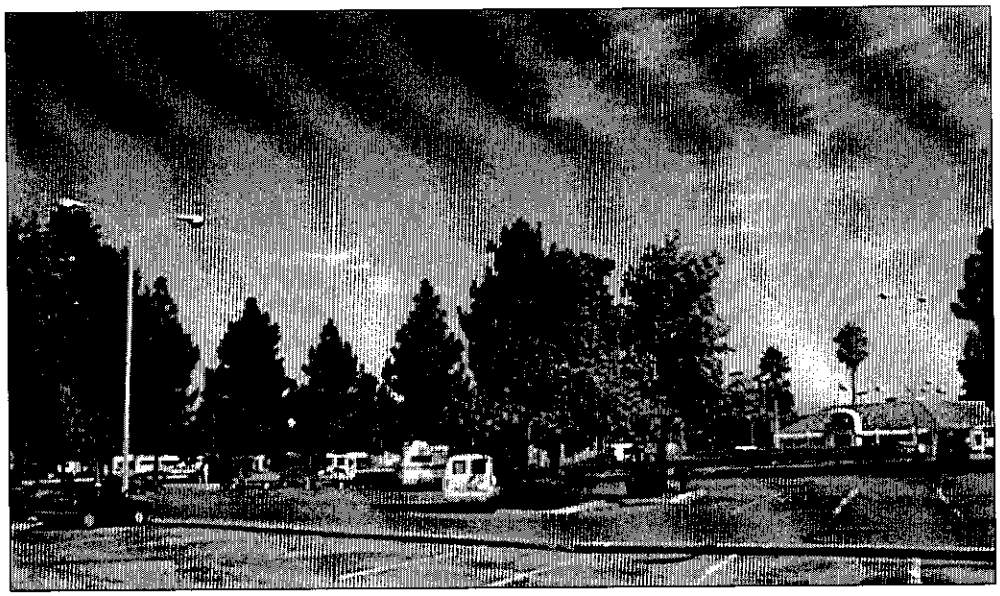
TREE REPORT

Santa Clara Square
Santa Clara CA



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November, 2003

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Introduction and Overview

Santa Clara Square LLC is planning to redevelop Santa Clara Square, located at the intersection of El Camino Real and the Lawrence Expressway in Santa Clara. The project proposes to build a mixture of residential and commercial buildings on the site. HortScience, Inc. was asked to prepare a Tree Report for the site for review by the City of Santa Clara.

This report provides the following information:

1. A survey of trees within the proposed project area.

2. An evaluation of each tree's suitability for preservation.

3. Guidelines for tree preservation during the design and construction phases of development.

Survey Methods

Trees were surveyed on October 23, 2003. The survey included trees greater than 6" in diameter. The survey procedure consisted of the following steps:

1. Identifying the tree as to species;
2. Tagging each tree with an identifying number and recording its location on a map;
3. Measuring the trunk diameter at a point 54" above grade;
4. Evaluating the health and structural condition using a scale of 1 – 5:
   - ***5*** - A healthy, vigorous tree, reasonably free of signs and symptoms of disease, with good structure and form typical of the species.
   - ***4*** - Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
   - ***3*** - Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
   - ***2*** - Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
   - ***1*** - Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.
5. Rating the suitability for preservation as "good", "fair" or "poor". Suitability for preservation considers the health, age and structural condition of the tree, and its potential to remain an asset to the site for years to come.

   Good: Trees with good health and structural stability that have the potential for longevity at the site.

   Moderate: Trees with somewhat declining health and/or structural defects than can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in 'good' category.

   Poor: Tree in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual may have characteristics that are undesirable for landscapes, and generally are unsuited for use areas.

Description of Trees

One hundred fifty-seven trees were evaluated. Descriptions of each tree are found in the ***Tree Survey*** and locations are plotted on the ***Tree Survey Map*** (see Attachments). A summary is provided in Table 1.

There were 10 taxa represented at the site (Table 1). The most frequently occurring species was shiny xylosma (29% of the population). Sweetgum (28%) and southern magnolia (26%) were also well represented. Tree size ranged from six to 24" in diameter.

Tree condition was predominantly fair (61%) to good (32%). The dominant species were tolerant of large paved surfaces on the site. The 11 trees in poor condition were primarily sweetgums that were suffering from declining health due to the arid conditions.

None of the species was native to the area. All appear to have been planted as landscape amenities and to provide shade in the parking lot.

Table 1: Condition ratings and frequency of occurrence of trees.

Common Name	Scientific Name	Condition Rating			No. of Trees
		Poor (1-2)	Fair (3)	Good (4-5)	
Silk tree	*Albizia julibrissin*		1		1
European birch	*Betula nigra*		1		1
Hopseed	*Dodonia viscosa*	2	1		3
Silver dollar gum	*Eucalyptus polyanthamos*	1	1	3	5
Sweetgum	*Liquidambar styraciflua*	7	23	14	44
Southern magnolia	*Magnolia grandiflora*		7	2	9
Canary Island Pine	*Phoenix canariensis*	1	16	23	41
Scarlet oak	*Quercus coccinea*			3	3
Mexican fan palm	*Washingtonia robusta*			4	4
Shiny xylosma	*Xylosma congestum*		46		46
Total		**11**	**96**	**50**	**157**
		7%	61%	32%	100%

Suitability for Preservation

Before evaluating the impacts that will occur during development, it is important to consider the quality of the tree resource itself, and the potential for individual trees to function well over an extended length of time. Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape.

Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. For trees growing in open fields, away from areas where people and property are present, structural defects and/or poor health present a low risk of damage or injury if they fail. However, we must be concerned about safety in use areas. Therefore, where development encroaches into existing plantings, we must consider their structural stability as well as their potential to grow and thrive in a new environment. Where development will not occur, the normal life cycles of decline, structural failure and death should be allowed to continue.

occur, the normal life cycles of decline, structural failure and death should be allowed to continue.

Evaluation of suitability for preservation considers several factors:

- **Tree health**
  Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.

- **Structural integrity**
  Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely.

- **Species response**
  There is a wide variation in the response of individual species to construction impacts and changes in the environment. In our experience, for example, southern magnola is sensitive to construction impacts, while Mexcan fan palm is more tolerant of site disturbance.

- **Tree age and longevity**
  Old trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (Table 2).

We consider trees with good suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with low suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Table 2: Tree Suitability for Preservation

Good These are trees with good health and structural stability that have the potential for longevity at the site. Forty-one (41) tree were rated as having good suitability for preservation. Their species distribution is listed below.

No. of trees	Species
23	Canary Island pine
4	Mexican fan palm
3	Scarlet oak
1	Silver dollar gum
2	Southern magnolia
8	Sweetgum

Moderate

Trees in this category have fair health and/or structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the "good" category. One hundred-five (105) trees were rated as having moderate suitability for preservation. Their species distribution is listed below.

No. of trees	Species
17	Canary Island pine
1	European birch
1	Hopseed
46	Shiny xylosma
1	Silk tree
3	Silver dollar gum
7	Southern magnolia
29	Sweetgum

Poor

Trees in this category are in poor health or have significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Eleven (11) trees were rated as having low suitability for preservation. Their species distribution is listed below.

No. of trees	Species
1	Canary Island pine
2	Hopseed
1	Silver dollar gum
7	Sweetgum

Evaluation of Impacts and Recommendations for Preservation

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. A development plan for the proposed project has yet to be completed, but in concept it will be a multi-use development including residential and commercial uses. It is likely that many of the perimeter trees will be able to be preserved, while preservation of the interior trees will depend on the intensity of development and placement of individual elements.

Preservation of trees on the Santa Clara Square site is predicated on the creation of a Tree Protection Zone for each tree and other methods described in the Tree Preservation Guidelines that follow.

Tree Preservation Guidelines

than an asset. The response of individual trees will depend on the amount of excavation and grading, the care with which demolition is undertaken, and the construction methods. Coordinating any construction activity inside the Tree Protection Zone can minimize these impacts.

The following recommendations will help reduce impacts to trees from development and maintain and improve their health and vitality through the clearing, grading and construction phases.

Design recommendations

1. A **TREE PROTECTION ZONE** shall be established around each tree designated for preservation. For design purposes the TPZ shall be defined at the edge of the dripline. No grading, excavation, construction or storage of materials shall occur within that zone. When trunks are accurately located and development plans refined, the Consulting Arborist will identify specific **TREE PROTECTION ZONES** for each tree.

2. No underground services including utilities, sub-drains, water or sewer shall be placed in the **TREE PROTECTION ZONE**.

3. **Tree Preservation Notes**, prepared by the Consulting Arborist, should be included on all plans.

4. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.

5. Irrigation systems must be designed so that no trenching will occur within the **TREE PROTECTION ZONE**.

Pre-construction treatments and recommendations

1. The construction superintendent shall meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection.

2. Fence each tree designated for preservation to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link or equivalent as approved by consulting arborist. Fences are to remain until all grading and construction is completed.

3. Prune trees to be preserved to provide clearance from construction vehicles and new structures where required. All pruning shall be completed by a Certified Arborist or Tree Worker and adhere to the **Best Management Practices for Pruning** of the International Society of Arboriculture.

Recommendations for tree protection during construction

1. No grading, construction, demolition or other work shall occur within the **TREE PROTECTION ZONE**. Any modifications must be approved and monitored by the Consulting Arborist.

2. Any root pruning required for construction purposes shall receive the prior approval of, and be supervised by, the Consulting Arborist.

3. Supplemental irrigation shall be applied as determined by the Consulting Arborist.

3. Supplemental irrigation shall be applied as determined by the Consulting Arborist.

4. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.

5. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.

6. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

7. As trees withdraw water from the soil, expansive soils may shrink within the root area. Therefore, foundations, footings and pavements on expansive soils near trees should be designed to withstand differential displacement.

HortScience, Inc.

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Certified Arborist WE-0105A
Registered Consulting Arborist #373

Tree Survey Map

Santa Clara Square
Santa Clara, CA

Prepared for:
Mindigo & Associates
San Jose, CA

October 2003

No Scale

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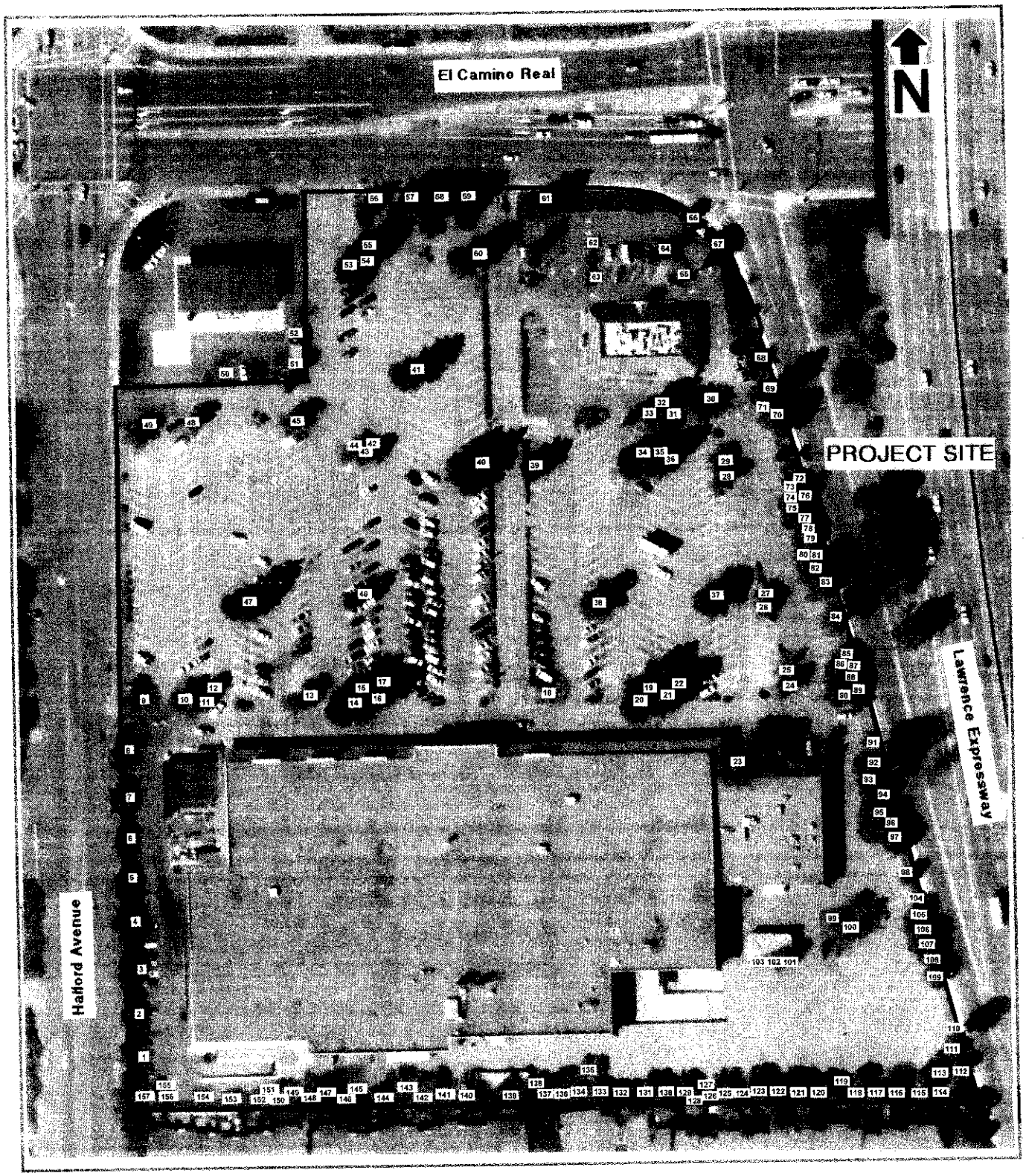

Notes:
BASE MAP PROVIDED BY
MINDIGO & ASSOCIATES
SAN JOSE, CA
NUMBERED TREE LOCATIONS
ARE APPROXIMATE

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TREE No.	SPECIES	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
1	Canary Island Pine	20	3	Moderate	Asymmetric crown.
2	Canary Island pine	17	4	Good	Good form & health.
3	Canary Island pine	17	4	Good	Good form & health.
4	Canary Island pine	22	4	Good	Good form & health.
5	Canary Island pine	21	4	Good	Good form & health.
6	Canary Island pine	16	4	Good	Good form & health.
7	Canary Island pine	20	4	Good	Good form & health.
8	Canary Island pine	19	4	Good	Good form & health.
9	Sweetgum	15	3	Moderate	Upper crown was removed.
10	Sweetgum	10	3	Moderate	Spreading crown.
11	Sweetgum	8	3	Moderate	Leaning trunk.
12	Sweetgum	10	2	Poor	Twig dieback.
13	Sweetgum	12	2	Poor	Dieback in upper crown.
14	Canary Island pine	16	4	Good	Good form & health.
15	Canary Island pine	14	3	Moderate	Crown partially suppressed.
16	Canary Island pine	11	3	Moderate	Crown partially suppressed.
17	Canary Island pine	16	3	Moderate	Crown partially suppressed.
18	Silk tree	16	3	Moderate	Sparse foliage.
19	Canary Island pine	15	3	Moderate	Crown partially suppressed.
20	Canary Island pine	21	3	Moderate	Crown partially suppressed.
21	Canary Island pine	11	3	Moderate	Crown partially suppressed.
22	Canary Island pine	20	3	Moderate	Crown partially suppressed.
23	Silver dollar gum	24	3	Moderate	Multi-stemmed at 24'.
24	Sweetgum	11	3	Moderate	Dieback in upper crown.

TREE No.	SPECIES	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
25	Sweetgum	9	2	Poor	Dieback in upper crown.
26	Sweetgum	10	2	Poor	Dieback in upper crown.
27	Sweetgum	6	2	Poor	Dieback in upper crown.
28	Sweetgum	10	3	Moderate	Leaves scorched.
29	Sweetgum	8	2	Poor	Trunks attach at 8'.
30	Sweetgum	15	3	Moderate	Spreading form.
31	Canary Island pine	22	4	Moderate	Crown partially suppressed.
32	Canary Island pine	12,9	3	Moderate	Trunks attach at base.
33	Canary Island pine	12	2	Poor	Leaning trunk.
34	Canary Island pine	14	3	Moderate	Crown partially suppressed.
35	Canary Island pine	16	3	Moderate	Crown partially suppressed.
36	Canary Island pine	18	4	Good	Good form and health.
37	Canary Island pine	19	4	Good	Good form and health.
38	Canary Island pine	18	4	Good	Good form and health.
39	Canary Island pine	16	4	Good	Good form and health.
40	Canary Island pine	24	4	Good	Good form and health.
41	Canary Island pine	20	4	Good	Good form and health.
42	Sweetgum	9	3	Moderate	Poor color foliage.
43	Sweetgum	11	3	Moderate	Poor color foliage.
44	Sweetgum	13	3	Moderate	Poor color foliage.
45	Sweetgum	14	3	Moderate	Trunk divides at 14'.
46	Canary Island pine	14	3	Moderate	Trunk wounded at base.
47	Canary Island pine	21	5	Good	Excellent form and health.
48	Sweetgum	10	3	Moderate	Poor color foliage.

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TREE No.	SPECIES	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
49	Sweetgum	13	2	Poor	Upper crown dead.
50	Scarlet oak	9	4	Good	Crown encroaches on site.
51	Scarlet oak	12	4	Good	Crown encroaches on site.
52	Scarlet oak	11	4	Good	Crown encroaches on site.
53	Canary Island pine	14	3	Moderate	Crown partially suppressed.
54	Canary Island pine	20	3	Moderate	Leaning trunk.
55	Canary Island pine	18	4	Good	Good form and health.
56	Canary Island pine	15	4	Good	Good form and health.
57	Canary Island pine	19	4	Good	Good form and health.
58	Canary Island pine	22	4	Good	Good form and health.
59	Canary Island pine	18	4	Good	Good form and health.
60	Canary Island pine	24	4	Good	Good form and health.
61	Canary Island pine	28	4	Good	Ground saturated.
62	Mexican fan palm	18	5	Good	6' of clear trunk.
63	Mexican fan palm	24	5	Good	6' of clear trunk.
64	Mexican fan palm	25	5	Good	35' of clear trunk.
65	Mexican fan palm	20	5	Good	35' of clear trunk.
66	Southern magnolia	8	4	Good	Good form and health.
67	Southern magnolia	11	3	Moderate	Poor color foliage.
68	Southern magnolia	8	3	Moderate	Interior branch dieback.
69	Canary Island pine	24	4	Good	Good form and health.
70	Canary Island pine	18	3	Moderate	Branch broken.
71	Southern magnolia	6,5,4	3	Moderate	Trunks attach at base.

TREE No.	SPECIES	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
72	Canary Island pine	8	3	Moderate	Narrow crown.
73	Shiny xylosma	9	3	Moderate	Overgrown shrub.
74	Shiny xylosma	6	3	Moderate	Overgrown shrub.
75	Shiny xylosma	7	3	Moderate	Overgrown shrub.
76	Shiny xylosma	7,6	3	Moderate	Overgrown shrub.
77	Shiny xylosma	7	3	Moderate	Overgrown shrub.
78	Shiny xylosma	8,4	3	Moderate	Overgrown shrub.
79	Shiny xylosma	6,5	3	Moderate	Overgrown shrub.
80	Shiny xylosma	6	3	Moderate	Overgrown shrub.
81	Shiny xylosma	6	3	Moderate	Overgrown shrub.
82	Shiny xylosma	7	3	Moderate	Overgrown shrub.
83	Silver dollar gum	23,14	4	Good	Trunks attach at base.
84	Silver dollar gum	20	2	Poor	Poor color foliage.
85	Shiny xylosma	6	3	Moderate	Overgrown shrub.
86	Shiny xylosma	10	3	Moderate	Overgrown shrub.
87	Shiny xylosma	9	3	Moderate	Overgrown shrub.
88	Shiny xylosma	6	3	Moderate	Overgrown shrub.
89	Shiny xylosma	9	3	Moderate	Overgrown shrub.
90	Southern magnolia	10	3	Moderate	Sparse foliage.
91	Silver dollar gum	25	4	Moderate	Spreading form.
92	Shiny xylosma	7,4,4	3	Moderate	Overgrown shrub.
93	Shiny xylosma	6,5,3	3	Moderate	Overgrown shrub.
94	Shiny xylosma	7,6	3	Moderate	Overgrown shrub.
95	Shiny xylosma	7	3	Moderate	Overgrown shrub.

TREE No.	SPECIES	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
96	Shiny xylosma	8,4	3	Moderate	Overgrown shrub.
97	Shiny xylosma	7,7	3	Moderate	Overgrown shrub.
98	Southern magnolia	8	4	Good	Good form and health.
99	Sweetgum	13	4	Good	Good form and health.
100	Sweetgum	17	4	Good	Spreading form.
101	Sweetgum	14	4	Good	Good form and health.
102	Sweetgum	7	3	Moderate	Poor color foliage.
103	Sweetgum	7	3	Moderate	Poor color foliage.
104	Southern magnolia	6	3	Moderate	ms at 6'.
105	Shiny xylosma	7,7	3	Moderate	Ovate form.
106	Shiny xylosma	10,9,5	3	Moderate	Overgrown shrub.
107	Shiny xylosma	7,5	3	Moderate	Overgrown shrub.
108	Shiny xylosma	9,6,5	3	Moderate	Overgrown shrub.
109	Southern magnolia	6	3	Moderate	ms at 6'.
110	Silver dollar gum	19	4	Moderate	ms at 18.
111	Shiny xylosma	6	3	Moderate	Ovate form.
112	Southern magnolia	8	3	Moderate	ms at 6'.
113	Shiny xylosma	10	3	Moderate	Ovate form.
114	Shiny xylosma	11	3	Moderate	Ovate form.
115	Shiny xylosma	10	3	Moderate	Ovate form.
116	Sweetgum	14	4	Moderate	Good form and health.
117	Hopseed	7	2	Poor	Dieback on trunk.
118	Sweetgum	14	4	Moderate	Good form and health.
119	Hopseed	7	2	Poor	Dieback on trunk.

TREE No.	SPECIES	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
120	Shiny xylosma	10	3	Moderate	Ovate form.
121	Sweetgum	14	5	Moderate	Multi-stemmed at 12'.
122	Shiny xylosma	8	3	Moderate	Ovate form.
123	Shiny xylosma	9	3	Moderate	Ovate form.
124	Sweetgum	11	3	Moderate	Multi-stemmed at 12'.
125	Shiny xylosma	9	3	Moderate	Ovate form.
126	Sweetgum	15	4	Moderate	Good form and health.
127	Sweetgum	14	4	Moderate	Good form and health.
128	Sweetgum	14	4	Moderate	Trunks attach at 6'.
129	Shiny xylosma	10	3	Moderate	Ovate form.
130	Sweetgum	14	3	Moderate	Multi-stemmed at 14'.
131	Hopseed	8	3	Moderate	Dieback on trunk.
132	Shiny xylosma	10	3	Moderate	Ovate form.
133	Shiny xylosma	11	3	Moderate	Ovate form.
134	Sweetgum	13	3	Moderate	Multi-stemmed at 20'.
135	Sweetgum	15	3	Moderate	Multi-stemmed at 14'.
136	Shiny xylosma	9	3	Moderate	Ovate form.
137	Shiny xylosma	10	3	Moderate	Ovate form.
138	Shiny xylosma	9	3	Moderate	Ovate form.
139	Sweetgum	17	3	Moderate	Multi-stemmed at 7'.
140	Sweetgum	15	3	Moderate	Goo on trunk.
141	Sweetgum	18	4	Good	Good form and health.
142	Shiny xylosma	9	3	Moderate	Ovate form.
143	Shiny xylosma	11	3	Moderate	Ovate form.

TREE No.	SPECIES	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
144	Sweetgum	19	4	Good	Branch failed.
145	Sweetgum	16	4	Good	Multi-stemmed at 8'.
146	Sweetgum	14	3	Moderate	Narrow crown.
147	Shiny xylosma	6	3	Moderate	Ovate form.
148	European birch	9	3	Moderate	Narrow crown.
149	Sweetgum	16	4	Good	Branch failed.
150	Shiny xylosma	10	3	Moderate	Ovate form.
151	Shiny xylosma	6	3	Moderate	Ovate form.
152	Sweetgum	18	3	Moderate	Spreading form.
153	Sweetgum	13	3	Moderate	Spreading form.
154	Shiny xylosma	10	3	Moderate	Ovate form.
155	Shiny xylosma	9	3	Moderate	Ovate form.
156	Sweetgum	12	4	Good	Multi-stemmed at 8'.
157	Sweetgum	18,10,8	3	Moderate	Multi-stemmed at 2'.